

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Chao-Lung Chen et al.

Serial No.: Not Known Yet


Group Art Unit: Not Known Yet

Filed: 05/06/2004

Examiner: Not Known Yet

For: **COPPER PLATING OF SEMICONDUCTOR DEVICES
USING INTERMEDIATE IMMERSION STEP**

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage under EXPRESS MAIL LABEL NO. EV 394063305 US addressed to: Mail Stop Patent Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

5/6/2004
Date

Chris Lambriodes

**INFORMATION DISCLOSURE STATEMENT
TRANSMITTAL LETTER**

Dear Sir:

Enclosed herewith is an Information Disclosure Statement pursuant to 37 CFR.
§ 1.56 in connection with the above-identified application, which statement is being filed:

- ☒ [X] Together with the present application.
- ☐ [] Before the first Office Action on the merits or three (3) months from the filing date of this application, whichever occurs last. [37 CFR § 1.97(b)]
- ☐ [] After the first Office Action on the merits, but before a Final Office Action under §1.113 or Notice of Allowance under §1.311, whichever occurs first. [37 CFR § 1.97(c)]
- ☐ [] After a Final Office Action under §1.113 or Notice of Allowance under §1.311, but prior to or with payment of the Issue Fee. [37 CFR § 1.97(d)]

Consistent with Applicant's obligations pursuant to 37 CFR §§1.97 and 1.98, the following requirements have been met:

☒ No separate requirements are needed.

☒ No additional fee is required.

☐ **Fee Under 37 CFR § 1.97(c)**

The fee of \$180.00 for submission of an IDS under § 1.97(c) as set forth in § 1.17(p) accompanies this statement.

☐ **Fee Under 37 CFR § 1.97(d)**

The fee of \$180.00 for submission of an information disclosure statement under § 1.97(d) set forth in § 1.17(p) accompanies this statement.

☐ **Certification Under 37 CFR § 1.97(e)**

- ☐ Each item of information contained in this statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement; or
- ☐ No item of information contained in this statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the statement after making reasonable inquiry, no item of information contained in this statement was known to any individual designated in §1.56(c) more than three months prior to the filing of this statement.

Provision of Copies of References

☒ A copy of each of the non-U.S. patent references listed on the attached Form PTO-1449 is enclosed herewith and forms a part hereof.

☐ Partial Translation is enclosed herewith and form a part hereof.

☐ A copy of the European Search Report from a corresponding or related EPO application is enclosed herewith.

- ☐ A copy of the International Search Report from a corresponding or related PCT application is enclosed herewith.

Identification of Prior Application(s) In Which Listed Information Was Already Cited And For Which No Copies Are Submitted Or Need Be Submitted

- ☐ This application relies, under 35 U.S.C. § 120, on the earlier filing date of prior U.S. Application No(s). . The following references were submitted to, and/or cited by, the Office in the prior application(s) and therefore are not required to be provided in this application:
- ☒ The Commissioner is hereby authorized to charge any fees associated with this communication or credit any overpayment to Deposit Account No. 04-1679. A duplicate copy of this transmittal is attached.

Respectfully submitted,

DATE: 5/6/04

Richard A. Paikoff
Richard A. Paikoff
Attorney for Applicant(s)

DUANE MORRIS LLP
One Liberty Place
Philadelphia, PA 19103-7396
Telephone: 215-979-1853
Fax: 215-979-1020

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Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 1 of 2

Complete if Known

Application Number	Not Known Yet
Filing Date	05/06/2004
First Named Inventor	Chao-Lung Chen
Art Unit	Not Known Yet
Examiner Name	Not Known Yet
Attorney Docket Number	N1085-00288

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	A	US- 5,151,168	09-29-1992	Gilton et al.	
	B	US- 5,662,788	09-02-1997	Sandhu et al.	
	C	US- 5,723,387	03-03-1998	Chen	
	D	US- 6,056,864	05-02-2000	Cheung	
	E	US- 6,074,544	06-13-2000	Reid et al.	
	F	US- 6,140,241	10-31-2000	Shue et al.	
	G	US- 6,319,831	11-20-2001	Tsai et al.	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				

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Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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First Named Inventor	Chao-Lung Chen
Art Unit	Not Known Yet
Examiner Name	Not Yet Assigned
Attorney Docket Number	N1085-00288

Sheet 2 of 2

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	H	SATO ET AL., "Newly Developed Electro-Chemical Polishing Process of Copper as Replacement of CMP Suitable for Damascene Copper Inlaid in Fragile Low-k	
		Dielectrics", Electron Devices Meeting, 2001. IEDM Technical Digest. International, 2-5 Dec. 2001, Pages 4.4.1 - 4.4.4	
	I	GRANDIKOTA ET AL., "Influence of Plating Parameters on Reliability of Copper Metallization", Interconnect Technology Conference, 2002. Proceedings of the IEEE	
		2002 International, 3-5 June 2002, Pages 197 - 199	

Examiner
SignatureDate
Considered

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¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 120 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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